

1 September 1965

General Comments

1. Review of the [] manual by several (7) school trained PI's [] with some [] interpretation experience indicates that this manual will be most usefull.

2. While there is general agreement that Section I is extremely well done a number of comments and recommendations were made and are listed here for consideration.

a. The manual should be considered as an advanced manual rather than as basic in that prior formal training is essential to a full grasp of the materials presented. This is not to say that the manual could not be used in basic instruction by a qualified instructor.

b. The third section presenting the build-up monitoring exercise is overdone in the amount of detail (text and illustrations) presented to prove obvious points. This section could have been much more comprehensive had the number of situation types been increased and the amount of repetitious detail reduced.

c. While Section II is most useful - the examples used are limited and stereotyped. By limiting the materials to products of their build-up monitoring project they deny the user a wealth of material and knowledge derived from other projects and other sensor systems.

d. The discussions and illustrations presented in Section I on Lamberts Law of co-sines, Wiens Displacement Law and the Stefan-Boltzman Law are awkward and difficult to follow, I would suggest that they be re-worked and that illustrations and examples of each be adapted to the airborne sensor/target analysis problem rather than the physics book/laboratory approach.

e. Figure 23 is also awkward and deceptive - as well as uninteresting here again an illustration adapted to the sensor/target environment would be most appropriate-similar to the attache figure on radiation balance. (this figure is from TI)

Declass Review by
NIMA/DOD

f. The emissivity tables presented (Appendix II) and the discussion on emissivity in Section I leaves much to be desired. The discussion fails to point out that we are most concerned with effective emissivity and the table does not list effective emissivity - assumedly listed as "normal emissivity?". The table needs an introduction and simplification - through elimination of those listings which we cannot or would not utilize in the airborne sensor/target analysis environment. I question the statement as written in I A-9 concerning the relation of target tone to detector sensitivity. The example given (a target appearing as "Hot" to a 3-5M detector simultaneously appearing as "Cold" to a 8-14M detector is misleading if not totally incorrect. Radiation from a target with peak emittance in the 3-5M wavelength does not stop abruptly at the 3 and 5 nor does a detector with peak sensitivity in the 8-14M region stop sensing abruptly at the 8 and 14. Infact Figure 10 illustrates this point.

g. A discussion on Gei Hq detectors is presented but none on Insb - again no indication is given of the advantages/disadvantages of various detectors in their application as airborne sensors.

Page by Page Comments

Page	#	Comment:	
ii	1	<u>Substitute:</u> This manual is one of the products of a research program to determine the most effective techniques of using sequential day photography and night imagery to determine changes in target activity. More specifically, the project sought to simulate acquisition and analysis of changing activity levels of certain targets which are indicators of military "build-up".	STAT
	2	delete	
iv	1	It would be very useful to include a list of all math symbols used in subsequent sections.	
I-1	1	'recorded' is a more accurate term	
	2	 structures. Please correct this erroneous impression.	STAT
I-3	1	The arrow is not explicit enough to indicate the limits of the visible spectrum.	
	2	GRAY is the preferred usage in this country	
I-4	1	Check the clarity of this formula	
I-5	1	STEFAN	
I-6	1	'hot' & 'cold' need some type of qualification relate to tone on positive film	
I-11	1	curvative of the film is reversed, isn't it?	
	2	"incident radiation" would help	
I-13	1	define X, Y, Z	
I-16	1	This drawing implies that distance B' is greater than A' while the text says they are equal.	
I-17	1	distance in which direction? scan or track	

STAT

Page	#	Comment:
I-20	1	why confuse this drawing by overlapping the photography ☐ coverage?
	2	perspective on this drawing is very poor
I-22	1	both gains and loses by long λ radiation. The statement in the book seems confusing and misleading
	2	the target does not assume the snow's emissivity.
I-23	1	possibly the addition of arrows would help this illustration
II-1	1	tone should be related to positives and negatives. Both are used by interpreters.
II-2	1	difficult?
II-5	1	see comment in book
	2	on positive presentations
II-6	1	see comment in book
II-7	1	'some' backgrounds would be more accurate
II-8	1	consider the comments in the book. The interpretation is in question.
II-9	1	This needs to be rewritten - see comments in the book
II-10	1	see comments in book - I believe they are valid
II-12	1	The annotation 'A' in Figures 2 & 3 are not pointing to the same building. ☐ image of the tall building has been displaced over the street.
II-13	1	Consider the comment in book. The comment may be true but is it relevant to the point being made? Your decision.
II-14	1	Ignore the comment in the book - your interpretation is much more likely to be correct.
II-15	1	Also ignore the book comment. I do, however, question the work "containers". The word buildings would be more apropos.

STAT

Page	#	Comment:
II-17	1	Ignore the comment. Your point is well made.
II-18	1	see comment. These conflicting interpretations (II-18 and II-16) need more clarification.
II-20	1	The indicated time sequence of these images do not agree with the text and the interpretation thereof.
II-21	1	Consider comments in book
II-22	1	A statement about the marked tone difference between the ocean at D and the bay at E would be useful.
II-23	1	<u>Emissivity</u> of a material does not change by covering it with snow. It's <u>emittance</u> will be reduced because the snow is acting as an insulator. See book comment
II-28	1	The rotor blades <u>are</u> detectable at "B".
II-31	1	The print on page II-27 is a better quality print of this same scene. Why not use it.
II-47	1	Consider book comment
III-21	1	Annotation A & I indicate a conflicting activity. loading or unloading?
III-22	1	According to the indicated flight items, flight # 2 (page III-22) occurred before flight # 1 on preceding page?
	2	Also there does not seem to be much change in the number of hopper cars between the two flights.
III-75	1	The pier annotation numbers are missing.

Appendix:

III-2	1	Conduction
III-3	1	Frequency
III-4	1	PLANK's LAW
III-5	1	WATT